INTRODUCTION TO COMPUTER SCIENCE I
LAB 9
Towers of Hanoi

Remember the *Towers of Hanoi* puzzle? We discussed it in class, and you're welcome to look it up. It's a classic example of problem that is amenable to a recursive solution, and we're going to develop some Python code to see that solution at work.

1 Your assignment

As described in lab, do the following:

1. **Find a solution:** Search the Internet for a solution to the *Towers of Hanoi* puzzle, written in Python. You will find many such solutions, so look for one that seems clearly written and makes sense to you. The core function—the recursive solver—is just a few lines long.

2. **Create a module:** Start a new module, `towers.py`, and copy-and-paste your favorite solution from the previous step into it. Go ahead and add whatever you need (e.g., a `main()` function) to make your pilfered solution go.

3. **Modify the module:** Change your module, and your solver function, as needed so that it will keep track of the discs by moving numbers between lists, and then printing those lists to show the discs on the posts. That is, your program should ask the user for a number of discs to use for the puzzle, and then it should show the starting point of the puzzle like so (given, say, a request for 5 discs):

   ```
   [5, 4, 3, 2, 1]
   []
   []
   ```

   If the smallest disc were to move from the top list (the first post) to the middle list (the second post), then the lists should be changed to look like this:

   ```
   [5, 4, 3, 2]
   [1]
   []
   ```

The program should show all three posts after each move, ideally in a consistent order, each time a disc is moved. The final output should look like this:

```
[]
[]
[5, 4, 3, 2, 1]
```

4. EXTRA CHALLENGE—**Use the turtle!** In the basic version, the posts and discs (or, really, the lists and integers that represent the posts and discs) are printed. As an extra challenge, write a function that, given three lists of integers, draw the discs on their posts by using the turtle.

2 Submitting your work

As always, go to the course submission page, and submit your completed `towers.py` for Lab 9

This assignment is due by Thursday, Apr-10, at 11:59 pm.